**Faculty: Computer Science and Multimedia**

**Course: Bachelor (HONS) of Information Technology**

**Subject: Quantitative Methods**

**F. M.: 100**

**Time: 3 hrs.**

**SECTION A**

**Multiple Choice Questions (30\*1 = 30)**

1. **If mean and standard deviation of a set of data are 25 and 10 respectively, then coefficient of variation of given data set is:**
2. 35%
3. **40%**
4. 15%
5. 50%
6. **Probability can take a value:**
7. **0 to 1**
8. Any real number
9. -1 to 1.
10. None of above.
11. **Bayes’ theorem is applied to calculate:**
12. **Conditional probability**
13. Revised probability
14. Joint probability
15. Marginal probability.
16. **If event B is already occurred, what is the probability of A refers to:**
17. A.
18. **A|B.**
19. B.
20. B|A.
21. **Coefficient of quartile deviation is given by the formula:**
22. **In which probability distribution mean, mode and median are equal?:**
23. Binomial
24. **Normal**
25. Poisson
26. All
27. **With the help of histogram, we can find:**
28. Mean
29. Median
30. **Mode.**
31. All of above.
32. **In binomial distribution for n number of trial and p probability of success, which relation holds? :**
33. Mean ≤ Variance
34. **Variance˂ Mean**
35. Mean ≥ Variance
36. None of above
37. **It is necessary to find cumulative frequencies in order to draw a/an**
38. Histogram
39. Frequency polygon
40. **Ogive curve**
41. Frequency curve
42. **Median is a measure of**
43. **Positional average.**
44. Dispersion.
45. Correlation.
46. Deviation from central value.
47. **A random variable which takes integer values is called:**
48. **Discrete random variable.**
49. Continuous random variable.
50. Mixed random variable.
51. Qualitative random variable.
52. **Which one of the given measure of dispersion is considered best?**
53. Range.
54. Quartile deviation.
55. **Standard deviation.**
56. Mean deviation.
57. **Given that P(B)= 0.4 and P(A∩B)=0.2, probability P(A| B) is equal to**
58. 0.4
59. 0.7
60. **0.5**
61. 0.15
62. **Test of hypothesis H0 : = 50 vs H1 :  leads to**
63. Left tailed test
64. **Two tailed test**
65. Right tailed test
66. None of the above
67. **Parameter of normal probability distribution is:**
68. Mode
69. Standard deviation
70. **Mean and standard deviation**
71. variance
72. **Binomial probability distribution refers to:**
73. Continuous probability distribution
74. **Discrete probability distribution**
75. Mixed probability distribution
76. All of above.
77. **Independent events are those events which are:**
78. Related with each-other.
79. Not occur simultaneously.
80. Complimentary to each-other.
81. **Not related with each-other.**
82. **Variance of binomial distribution is equal to:**
83. np
84. **npq**
85. nq
86. p+q
87. **The plot of less than and more than ogive in graph gives:**
88. Mean
89. **Median**
90. Mode
91. None of the above
92. **The probability of the intersection of two mutually exclusive events is always:**
93. Infinity
94. **Zero**
95. One
96. None of above
97. **If A and B are two events, the probability of only one of them can occur is given as:**
98. P (A∩B)
99. P(AB)
100. P(A) P(B)
101. **P(A ∩ )**
102. **Which of the following relations among the location parameters does not hold?**
103. Q2=median
104. P50=median
105. D5=median
106. **D6=median**
107. **In a regression line Y = a + bX, a is called the**
108. **Constant term**  c) Slope of line
109. Dependent variable d) Regression coefficient
110. **Consistency of a person depends on**
111. mean
112. mode
113. **variance**
114. median
115. **What is the relationship between A.M, G.M, and H.M? :**
116. **A.M≥G.M≥H.M.**
117. A.M≤G.M≤H.M.
118. A.M≤G.M=H.M.
119. A.M=G.M≤H.M.
120. **Find the total numbers of arrangements of the letters of the word STATISTICS?:**
121. 204000
122. 404000
123. 304000
124. **504000**
125. **The shape of the curve drawn from the frequency distribution is given by:**

a) **Skewness**

b) Kurtosis

c) Both a and b

d) None of above

1. **Student’s t-test is applicable when:**
2. **N ≤ 30,  unknown**
3. N ≥ 30,  unknown
4. N ≥ 30,  known
5. N ≤ 30,  unknown
6. **/;**
7. **Standard deviation.**
8. Quartile deviation.
9. Mean deviation.
10. 50 th percentile.
11. **Confidence interval of population mean is given by:**
12. **Z× SE(**
13. SE(
14. Z
15. Z× SE(

## SECTION B

**Short Answer Questions**

**Answer any five questions out of eight questions (5 \* 6=30)**

1. The probability that a new airport will get an award for its design is 0.16, the probability that will get an award for the efficient use of material is 0.24 and the probability that it will get both awards is 0.11. What is the probability that
   1. It will get at least one of the two awards. (2\*3 = 6)
   2. It will get only one of two awards. (Unit 7: Probability)
2. There are three machines A, B, and C producing 1000, 2000 and 3000 articles per hour respectively. These machines are known to be producing 1%, 2% and 3% defectives respectively. One article is selected at random from an hour production of the three machines and found to be defective. What is the probability that the article is produced from machine C? (Unit 7: Probability) (6)
3. If the probability of recovery from a certain disease is 0.2 and 10 people came down with the disease, what is the probability that i) Two of them will recover? ii) At least one will recover? (Unit 7: Probability) (2\*3 = 6)
4. In a test administered normally distributed to 1000 students, the average score was 55 and standard deviation 15. Find (3\*2 = 6)
   1. The number of students exceeding a score 75.
   2. The number of students lying between 46 and 86.
   3. The probability that student get mark less than 40. (Unit 8: Theoretical Distribution)
5. A random sample of 90 students is drawn from a certain campus and their weight showed a mean of 55 kg and a standard deviation of 5 kg. (2\*3 = 6)
6. Find standard error of sample means.
7. Construct a 95% confidence interval of mean weight of all students of the campus. (Unit 9: Estimation)

1. A business man has received a Rs. 1500000 loan from a bank in order to expand his business. The terms are that he repays the bank in full at the end of 11 years with simple interest computed at a rate of 18% per year. Determine the interest which must be paid on the 5-year loan. (Unit 1: Nature and scope of statistics) (6)
2. If r12 = 0.6, r13 = 0.4 and r23 = 0.35. Find the value of (3\*2 = 6)
3. Partial correlation coefficient between X1 and X2 keeping X3 constant.
4. Partial correlation coefficient between X2 and X3 keeping X1 constant.
5. Partial correlation coefficient between X1 and X3 keeping X2 constant.

(Unit 11: Correlation and regression)

1. A manufacturer of ball pens claims that mean writing life of 400 pages with a standard deviation of 20 pages. A purchasing agent selects a sample of 100 pens and puts them for test. The mean writing life for the sample was 390 pages. Should the purchasing agent reject the manufacturer’s claim? (6)

(Unit 10: testing of Hypothesis)

### SECTION C

**Long Answer Questions**

**Attempt any two questions out of three questions (20 \* 2 = 40)**

1. From the following distribution of wage of 250 workers in a factory, find
2. Mean wage of the distribution (3)
3. Median wage of the distribution (4)
4. The percentage of workers getting wage more than 75. (3)
5. Construct histogram and locate mode. (3)
6. Coefficient of quartile deviation. (4)
7. The minimum wage of 25% of richest workers. (3)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Wage | 0-20 | 20-40 | 40-50 | 50-60 | 60-80 | 80-100 |
| No. of workers | 50 | 100 | 150 | 90 | 60 | 50 |

( Unit 4, 5: Diagrammatic and graphic presentation of data / Measures of central tendency )

1. Price of shares of a company on a different day in a year were found to be in Rs 66,65,69,70,69,71,70,63,64 and 68.
2. Compute sample mean share and sample standard deviation. (5)
3. Compute standard error of estimate. (5)
4. Construct 95% and 91% confidence limits for mean share. (5)
5. Test the hypothesis that mean price of share is 68 at 5% level of significance. (5)

(Unit 9, 10: Estimation theory / Testing of hypothesis)

1. A. Following are the marks in Statistics (X) and Accountancy (Y) of six students.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| X | 26 | 24 | 24 | 27 | 25 | 23 |
| Y | 13 | 12 | 14 | 16 | 15 | 11 |

1. Compute correlation coefficient between them. (5)
2. Calculate the standard error and interpret its meaning. (5)

**B. The monthly bonuses in 100 Rs. Of 7 employees with different years of experience were recorded as follows:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Employees** | **A** | **B** | **C** | **D** | **E** | **F** | **G** |
| **Experience year x** | **1** | **2** | **3** | **4** | **5** | **6** | **7** |
| **Monthly bonus y** | **77** | **86** | **94** | **85** | **91** | **98** | **90** |

1. **Develop the estimating equation of the form y = a + bx for the data given above. (5)**
2. **Estimate the monthly bonus when the experience year is 10. (5)**

**(Unit 11: Correlation and regression analysis)**

**THE END**